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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,048	02/28/2002	Clara Maria Otero Perez	PHNL 010127	8816

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EXAMINER

BANANKHAH, MAJID A

ART UNIT	PAPER NUMBER
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2195

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/086,048	Applicant(s) OTERO PEREZ ET AL.	
	Examiner Majid A. Banankhah	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment and arguments

This office action is in response to amendment and remarks filed on September 6, 2005. Applicant's amendments necessitated the new grounds of rejection. Claims 1-10 are being considered for examination.

Applicant on page 5 of his remarks arguing", the rejected claims define subject matter for preventing the first task from resuming during that period". First, as stated below in the rejection of claims under 35 USC 112 first Paragraph, there is no teaching as how the task is prevented to resume executing during a "predetermined period". Secondly, the reference of **Mizuno**, in col. 7, lines 53-59, teaches that "the thread T3 remain in lock state during the first executing time (t0 to t1", and associated discussion), and this can be generalized for any time period even the one in which the task is blocked.

On page 5-6 applicant arguing that "The Applicants, respectfully, point out that while **Culbert** may discuss context switching in general there is no disclosure or suggestion within **Culbert** to implement context switching information to detect that a task is being blocked, this rejection is traversed".

In response, it must be pointed out that any blocking or locking is based upon context switching for the reason that the computer does not have to start executing the thread or program from the beginning when it has to be blocked for any reason. A computer that block a task without saving the state of the running task in favor of loading the state of the other task and later on restoring the state of the blocked task is very inefficient computer. This is well known in the art years before the filing date of the application. Still, the Examiner, in order to show that context switching is well known in the art, relied on Mizuno to show this feature. In

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short, anytime a computer stops a task and start the task at a later time must save the state of the running task and restore the saved state at a later time (when the task is ready to run) and that include blocking of a running task.

On page 6, Applicant arguing that "The Applicant, respectfully point out that there is no col. 47-50 within **Culbert**, therefore, it appears there is a typographical error in the Office Action. The Applicant, further point out that there is no disclosure or suggestion within the cited references for detecting the first task blocks during the period as defined by claims 3 and 6. Moreover, there is no disclosure or suggestion within the cited references for detecting that the first task blocks during the predetermined time period as defined by claims 3 and 6 after foregoing amendment to the claims, therefore,, this rejection is traversed."

In response, first, The it is agreed that there is no col. 47-50 in **Culbert**. This is a typographical error and the error is regretted. However, applicant's attention is respectfully directed to col. 6, lines 47-50 in **Culbert**, where he teaches of "suspending", and "resuming" a task. Additionally, it is submitted that **Kamada** in col. 23, lines 42-68 continued on col. 24, line 50, also Fig. 37, specifically col. 24, lines 33-41, teaches of blocking of the first task "First, the user level process scheduler 10 allocates a period of time from a moment T1 to another moment T6 to the user process 12-1 as the CPU (utilization) time. The user process 12-1 is, however blocked owing to I/O waiting. In response to the blocking detection 68, the user level process scheduler 10 allocates the remaining time from a moment T3 to the moment T6 to a process 120 belonging to the time sharing class". **Mizuno**, in col. 7, lines 53-59, teaches of the detail of blocking "the thread T3 remain in lock state during the first executing time t0 to t1". Additionally, as stated in the rejection of claims under 35 USC 112 first paragraph

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(detailed above), there is no teaching of starting and blocking task in a "predetermined time period".

Claim Rejections - 35 USC § 112 First paragraph

The following is a quotation of the first paragraph of 35

U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant amending claim to include the limitation of "predetermined time period". The specification does not clearly teach how a task is started during certain time period. On pages 5-7 in the specification, addressed by applicant in his remarks, there is no teaching as to how a predetermined time period is chosen so that first task to start running. The Examiner has conducted an electronic word search for this limitation and has found no "predetermined time period" in the specification.

Claim Rejections - 35 USC § 112 Second Paragraph

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. In the reply (amendment and remarks), filed on September 6, 2005, Applicant has stated "the foregoing amendment to claims as modified these claims to clearly identify that the period is a predetermined time period. This subject matter is discussed by the specification to the present invention on pages 5-7." However, there is no such teaching in the specification. In the specification, On page 5, 4th para. after the first partial para., discussion about Fig. 2, every task is starting after another task is blocked and based on the availability of the resource for the running task, and the first task is not mentioned that starts at a "predetermined time period".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the

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subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kamada** (US Pat. No. 6,108,683 hereafter **Kamada**) in view of **Mizuno** (US Pat. No. 5,524,247 hereafter **Mizuno**).

As to claims 1, 5, and 7-8, a method and system of scheduling a first task comprising the following steps:
a first step of starting the first task to run during a period (the system of **Kamada**, Abstract, and col. 23, lines 28-41),

a second step of detecting that the first task blocks during the period, characterized in that the method further comprises (col. 23, lines 42-68 continued on col. 24, line 50, also Fig. 37, specifically col. 24, lines 33-41, "First, the user level process scheduler 10 allocates a period of time from a moment T1 to another moment T6 to the user process 12-1 as the CPU (utilization) time. The user process 12-1 is, however blocked owing to I/O waiting. In response to the blocking detection 68, the user level process scheduler 10 allocates the remaining time from a moment T3 to the moment T6 to a process 120 belonging to the time sharing class", and associated discussion):

While the system of **kamada** teaches of blocking, he does not clearly explain the detail of blocking and preventing the first task resuming during the period. However, the system of **Mizuno**, teaches of scheduling system wherein the

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resource including CPU is allocated to program unit in any state other than "lock wait" state (see **Mizuno**, col. 7, lines 53-59, the thread T3 remain in lock state during the first executing time (t0 to t1", and associated discussion), for the reason that as long as the resource for the locked program is unavailable, the systems' efficiency does not increase by polling for CPU time or resource. Therefore it would have been obvious for one ordinary skill in the art at the time the invention was made to incorporate a "lock-wait" or "prevent resume" mechanism in order for other tasks not waiting for resource be able to run without difficulty, and therefore, increase the efficiency.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamada (US Pat. No. 6,108,683 hereafter Kamada) in view of Mizuno (US Pat. No. 5,524,247 hereafter Mizuno), and further in view of **Culbert** (US Pat. No. 5,838,968 hereafter **Culbert**).

As to claim 2, the system of **Kamada** and Mizuno does not explicitly teach of "context switching" in the process of "lock-wait", and "allocating CPU to the program units in any state other than the lock-wait" state of the Mizuno. However, it is well known in the art at the time the invention was made to use "context switching", in any switching between two program or threads, or task, whenever one program is blocked, or interrupted and changed states from "running" to "wait-lock" state, as it is evidenced by **Culbert** (col. 4, lines 60-61), for the reason to be able to retrieve the state of the interrupted (then locked and waited) task after the blocking state is over. Therefore, I would have been obvious for one ordinary skill in the art at the time the invention was made to use "context switching" (saving and restoring) concept in the combination of kamada and Mizuno, for the reason to be able to save be able to start

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from the point where the program or task or thread was blocked.

As to claims 3, and 6 the combination of Kamada, Mizuno, and Culbert, teach the invention as claimed including, the method of scheduling a first task according to claim 2, wherein the second step of detecting that the first task blocks during the period comprises:

a first sub-step of detecting that the first task is suspended and that a second task is allowed to start running;

and wherein the context switch information comprises:
a second priority of the second task that is lower than a first priority of the first task, and a remaining budget of the first task that is substantially equal to an assigned budget for the period minus a consumed budget during the period.

The system of Mizuno teaches of "Lock-wait" state in favor of running another program, but by definition suspend is a state in which a task is in a state of sleep in a temporary state but remain active in memory so it can resume later on, as it is evidenced by the "suspend resume" definition of Culbert (col. 47-50). Additionally, the scheduling system of Mizuno select task with priority, meaning the task which is running (the first task), has a higher priority (col. 3, lines 39-42). The last step of "remaining budget..." is obvious because, at any time the remaining of the resource is the difference between the assigned amount (during a time-slice or period needed for the task to finish), minus the consumed amount of the resource before the end of its period.

As to claim 4, the method of scheduling a first task according to claim 3, wherein the remaining budget is withdrawn from the first task during the period. The system of Culbert teaches of context preemption and context switching, wherein in the context switching, the active thread or task is stopped in favor of a thread or task with

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higher priority (Culbert col. 4, line 66 to col. 5, line 1-3). In context switching, while the task is preempted, the context of the stopped task is saved to be restored when the task is resumed. In this process, when the remaining of the time period of the task (remaining resource assigned to the thread) is practically removed because another task has started running.

Per claim 9-10 and please see the rejection of claim 5.

Prior Art not relied upon:

Please refer to the references listed on the attached PTO-892, which is relied upon in the claim rejections detailed above.

Conclusion

Applicant's amendment necessitated the new grounds of rejection. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE The application has been amended as follows:

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**ADVISORY ACTION. IN NO EVENT WILL THE
STATUTORY PERIOD FOR RESPONSE EXPIRE LATER
THAN SIX MONTHS FROM THE DATE OF THIS FINAL.**

How to Contact the Examiner:

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Majid Banankhah, whose telephone number is 571-272-3770. A voice mail service is also available at this number. The Examiner can normally be reached on Monday, and Wednesday - Friday, 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, An Meng-Ai who can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

All responses sent by U.S. Mail should be mailed to:

Commissioner for Patents
PO Box 1450

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Alexandria, VA 22313-1450

PTO CENTRAL FAX NUMBER:
703-872-9306

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- Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist:
(703) 305-3900.

MAJID BANAIKHAH
PRIMARY EXAMINER

